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[54] DIAGNOSTIC AGENTS STORAGE

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248/314

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248/361, 146, 314, 315; 24/257 R, 218, 2

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Primary Examiner—Roy D. Frazier

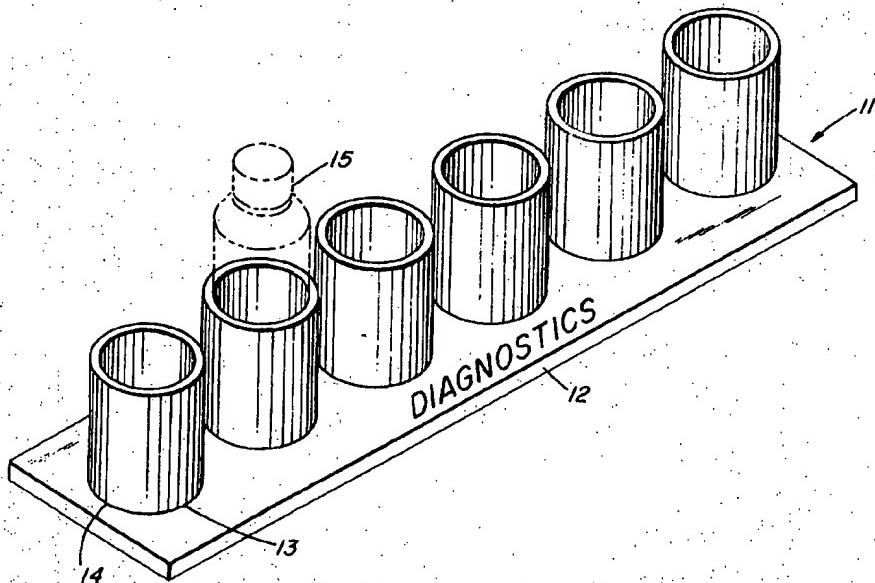
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[57] ABSTRACT

A storage rack adapted to hold a plurality of bottles of medical diagnostics, such as blood typing sera, consists of a flat plastic base plate having in ordered configuration thereon and effectively integral therewith a plurality of cylindrical plastic sleeves each of such size as to conveniently hold a single bottle, and having a spring loaded pin to prevent held bottle from being accidentally displaced during use.

1 Claim, 3 Drawing Figures



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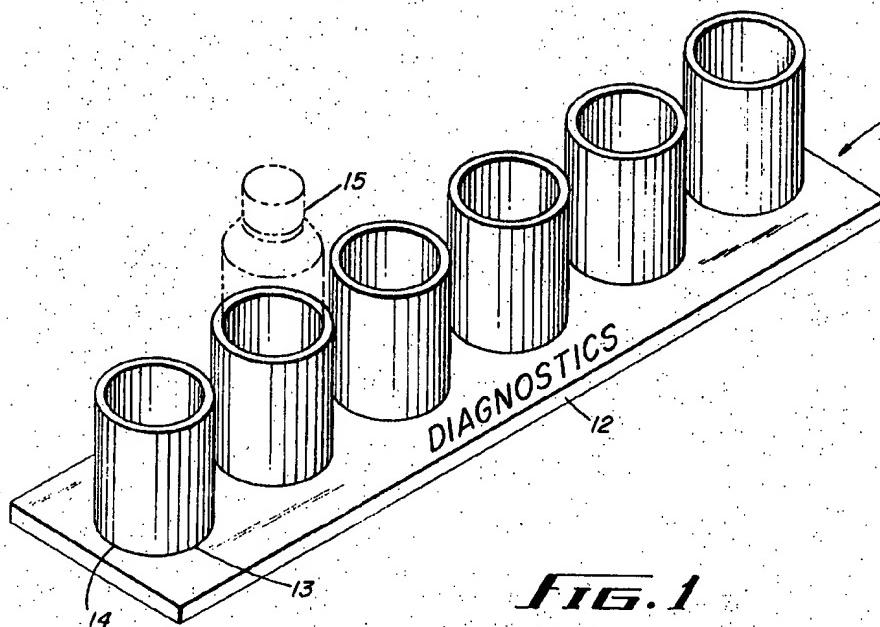


FIG. 1

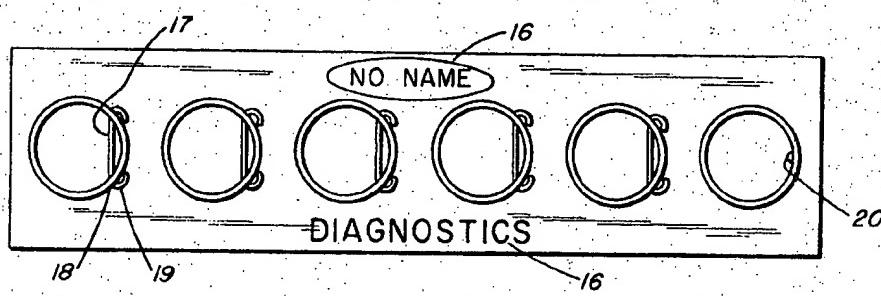


FIG. 2

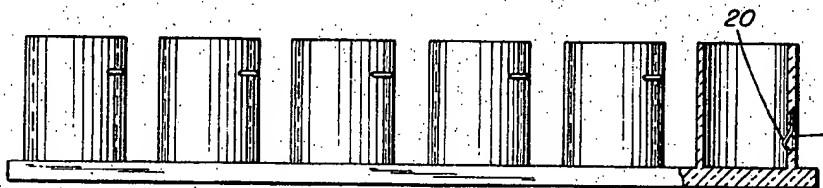


FIG. 3

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DIAGNOSTIC AGENTS STORAGE

More and more diagnostic agents are being used by the medical profession. Some of the better known of these are typing sera for typing blood as A, B, AB, O, Rh positive, Rh negative, etc. As more tests are developed for different clinical conditions, the more little bottles of the diagnostic agents accumulate on the medical workbench. These agents must each be meticulously carefully labeled, identified, and stored, frequently in a refrigerator, for use in diagnosing a specific attribute of a patients' condition.

With the number of such bottles in use, and the constantly increasing number of tests, it is extremely easy to knock over bottles, or pick the wrong bottle, or pick up a part of a set rather than the complete set, or the fumble around a group of bottles to find the specific one for a specific test at a specific time.

SUMMARY OF THE INVENTION

In accordance with the present invention it has been found that a convenient storage rack adapted to handle a plurality of such bottles is formed by effectively integrally fastening a plurality of cylindrical plastic sleeves to a flat plastic base. Conveniently the cylinders are right circular cylinders. The cross-section of the cylinder may be elliptical, circular or rectangular or other shape adapted to fit smoothly and retain a single bottle containing a diagnostic. Usually the bottles are round and hence the holders are circular in cross-section. Conveniently but not necessarily, a spring loaded pin or inserted spring fits into each such cylindrical sleeve so that when a bottle is placed in the sleeve, the spring bears against the side of the bottle and prevents relative motion of the bottle in the sleeve. Hence even if the rack is jarred or shaken the bottles do not fall out, and yet can be easily removed for the insertion of new bottles or at a time of use; if the clinician desires to remove a bottle at the time he is using part of the contents. On the other hand, the bottles are sufficiently retained so that it is convenient to remove a stopper and dispense an appropriate proportion of the contents of a single bottle for a diagnostic test, while using the rack to hold the bottle in position.

Obviously, the configuration and number of cylindrical sleeves may be modified to suit a particular series of tests and the esthetic considerations deemed preferable by a designer or user.

Conveniently but not necessarily the base is a rectangular base with a convenient number, such as six, sleeves arranged in linear order.

Preferably the plastic cylinders are transparent so that the labels on the bottles and the quantity of the diagnostic remaining may be ascertained by inspecting through the sleeves without the necessity for individually removing the bottles. If desired, the shape of the bottle and the cylinder may be keyed so that all of the labels are oriented in a single direction.

For small scale production, it is convenient to cut off sections of a plastic tube to form the plastic sleeves, and adhesively unite to a plastic base. Both the tube and the base may be of a material such as polystyrene, and one of the standard styrene cements can be used to soften the end of a cylindrical sleeve, as the sleeve is placed in position, and as the adhesive evaporates, the

cylindrical sleeve is effectively made unitary with the base. As an adhesive may be used a solvent containing additional styrene, or a solvent may be used as the adhesive with softening of the styrene of the sleeve and base causing adhesive union of the two parts. Polystyrene cements are well known in the industry.

Alternatively, for larger production, appropriate molds can be made and a single assembly formed by molding techniques. As molds of such a size and configuration are quite expensive, unless production run running into many thousands is contemplated, adhesive union to form monolithic storage racks is a preferred method of assembly.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a pictorial view of a plastic storage rack.

FIG. 2 is a top view of such storage rack.

FIG. 3 is a front view of such storage rack.

DESCRIPTION OF PREFERRED EMBODIMENTS

The plastic storage rack 11 is formed from a rectangular base 12 which has effectively unitarily attached thereto a plurality of cylindrical sleeves 13. In the configuration shown, the sleeves are of circular cross-section. The sleeves are attached to the base with an adhesive 14 which is adapted to the material of the base and sleeves. For example, the polystyrene plastic may be used, and a solvent of styrene, which may contain additional components, is used as the adhesive although a solvent such as toluene may be used to soften the ends of the cylindrical sleeves and the rectangular base by touching a drop of toluene to the juncture which by capillarity is carried between two portions and dissolves enough of each so that on gentle pressing an effectively monolithic rack is formed.

The size and shape of the sleeves are such as to hold a diagnostic bottle 15.

Depending upon the quantity of the diagnostic used, the number of tests to be made, and other choices, the sleeves may be from $\frac{1}{2}$ inch or smaller in diameter up to about 2 inches in diameter. The height of the sleeve is such that the bottle is conveniently held therein while exposing the mouth of the bottle for use. A sleeve height of an inch to two inches is frequently convenient. The plastic base is large enough to insure stability and has sufficient weight for the convenience of the user.

In one particular configuration, the length of the base was $8\frac{1}{4}$ inches, its width 2 inches and thickness $\frac{3}{16}$ inch with six sleeves each having an exterior diameter of 1 inch and an interior diameter of $\frac{7}{8}$ inch and a height of $1\frac{1}{4}$ inches being attached thereto.

For the convenience of the user, a legend 16 is silk screened onto the base to identify both the source and the general type of material contained. The label on the individual bottle is of course the ultimate identification for the desired contents.

To aid in holding the bottles against accidental displacement, as shown in FIG. 2, a plurality of spring pins 17 are inserted as secants in the cylindrical sleeve by inserting in spring pin holes 18, and crimping to form spring pin crimps 19 at each end of each spring pin. By using spring wire, a bottle may be pressed into each sleeve, thereby deflecting the spring pin to the side which permits the bottle to reach to the bottom of the

sleeve and contact the base. The spring has sufficient spring loading and rigidity that the bottle does not become accidentally displaced, but may be removed when desired.

Another type of spring loading is shown in the right end cylinder, and consists of an insert spring 20 in an insert spring groove 21, the insert spring groove is formed of an open groove in part and a closed groove in part with a spring being bent to fit in and be held by the closed groove with the end springing up and retaining the bottle in position. Optionally more complex springs may be used, but the spring pin or insert pin gives good retention, permit ready removal, is simple, and not subject to wear and tear or displacement.

Whereas the particular rack above described is formed of a polystyrene, obviously other plastics may be used with adhesives which are adapted to adhesively unite such plastics, or with molds constructed to form the entire assembly as a single molded piece.

It is also obvious that size, shape and configuration of both the cylindrical sleeves and the base plate and the number of sleeves may be modified in accordance with the desires of the particular user or the requirements of a series of tests. For many purposes, six sleeves hold enough diagnostic bottles for a particular purpose and

permit storage of a related group of diagnostic agents in a refrigerator, with the removal of the entire set for use by merely lifting a single base plate.

Additionally, the technician may be certain that he has the entire set and does not forget one, to find himself embarrassed by having all but a single required bottle to perform a diagnostic test. The quantity remaining of each of a set can be determined at one quick inspection, to avoid the risk of running out of one of a set.

I claim:

1. A storage rack adapted to hold a plurality of bottles of a medical diagnostics set consisting essentially of a flat rectangular plastic base plate, and in ordered straight line, spaced configuration thereon, and adhesively united to the base to form an integral unit, and effectively integral therewith, a plurality of cylindrical plastic sleeves, each having an interior size adapted to surround and retain a medical diagnostic bottle, and in each sleeve, near the top, a bottle retaining resilient spring pin, inserted through two holes as a secant in the cylindrical sleeve, and crimped at its ends externally of the sleeve, to prevent accidental displacement of the bottle.

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